4. WEAVER REBUTTAL REPORT.

REBUTTAL EXPERT REPORT OF
Albert Weaver III, CSP

RE: Brandon Taylor

I am in receipt of additional material in the case of Mr. Taylor and have been asked by you to review them and address new issues raised by the defendant's experts, and provide my opinions in rebuttal. This rebuttal report contains the opinions I will express, the basis for those opinions and the facts and data considered in forming my opinions.

My rebuttal opinions are as follows:

Rebuttal Opinions – Curran Report:

1. Defendant's expert Mr. Curran states that the Smithfield loading structure is not a confined space. (Curran report dated 11/21/14, p. 4). In rebuttal, the key area to look at is the McGill tanker itself and the tanker hatch itself. The tanker hatch opens to a confined space and accordingly needed confined space warnings and protections. OSHA found it was a confined space and required confined space labels.

2. Mr. Curran states that most hydrogen sulfide (H2S) deaths occur at confined spaces such as pits, vaults and sewers. (Curran report, p. 4). In rebuttal, there is much literature regarding H2S incidents at tanks, tankers and compost and fertilizer facilities, as well.

3. Mr. Curran states that Smithfield should have installed engineering controls. (Curran Report, p. 5). In rebuttal, in fact it was McGill that had the ability and duty to install equipment on its tankers. This could have included inexpensive and readily available gauges and other means to measure the fill level, allowing the operator to determine the fill level distant from the tank.

4. Mr. Curran states that the condition of the tanker truck and its presence had no effect on the concentrations of gas. (Curran Report, p. 5). In fact the presence and condition of the tanker had everything to do with it. The OSHA records clearly state the gas was being emitted from the tanker hatch.

Rebuttal Opinions – Felton Report:

1. Mr. Felton states that hydrogen sulfide (H2S) does not occur in compost facilities in amounts that are hazardous to health. (Felton Report, next to last page). In rebuttal, a literature search reflects multiple examples of H2S poisoning at

compost and fertilizer facilities. Further, literature regarding the compost and the fertilizer industry discusses the need to be aware for H2S dangers.

2. Mr. Felton also says H2S is merely an odor concern for composting, nothing more. (Felton Report, next to last page). In rebuttal, I refer again to the literature that shows otherwise.

3. Mr. Felton says he would not expect McGill to have knowledge of H2S dangers. (Felton Report, next to last page). In rebuttal, I refer again to the literature I mention above. Also, the statements of McGill employees reflect past episodes of gas problems. McGill tankers had been involved in past incidents at Smithfield. Finally, the trade publication Biocycle had articles about hydrogen sulfide and articles written by Craig Coker, who previously worked for McGill.

Rebuttal Opinions – Mary Carol Lewis Report:

1. Ms. Lewis states that McGill only drove tankers to and from Smithfield. (Lewis Report, "All Opinions," No. 1). In fact, McGill not only drove the tanker there, but the McGill driver also positioned the tanker below the Smithfield overhead tank. McGill provided the ladder on the side of the tanker, the walkway and overflow box on top and the hatch and other equipment fixed to the tanker. McGill in providing this equipment had a duty to provide safe equipment. Also, the McGill driver was there during the loading but McGill failed to train its drivers on how to warn and assist other persons present to ensure a safe process. McGill drivers at times opened or closed the hatch or got out of the truck cab during the loading. If they had been properly trained they could have easily helped people avoid the dangers.

2. Ms. Lewis states that OSHA did not cite McGill for anything related to the work at Smithfield. (Lewis Report, "All Opinions," No. 6). In rebuttal, OSHA noted that McGill was exposing its own workers to the same dangers as workers at Smithfield – in other words the dangers were related. If McGill had properly trained its own employees this would have protected other individuals working with them since McGill's employees would have understood the dangers. OSHA cited McGill for failures related to ignoring the dangers of hydrogen sulfide.

3. Ms. Lewis states that McGill bore no responsibility for Smithfield's operations. (Lewis Report, "All Opinions," No. 6). However, McGill did bear responsibility for people climbing up and working on its tankers, since the tanker services were part of its own services and operations.

Rebuttal Opinions – Schumacher Report:

1. Mr. Schumacher states that Mr. Taylor must have had his head too close to the open hatch. In fact, Mr. Taylor was doing what other wastewater operators such as Tim Artis did in cold conditions at night when trying to load. Mr. Taylor was draining the waste at night, when it was cold (February 2012, in winter), and during those conditions the sludge emitted steam. (See Tim Artis affidavit). Because of the dark and steamy conditions, workers at times would remove their goggles, unhook their harnesses, then get down and lean in close to determine the fill level of the tanker. This is what Mr. Artis had to do in the past and is consistent with what Ricky Robinson, the driver, says he saw Brandon doing – i.e. taking off his goggles, and leaning down. In fact during the 911 call, Mr. Robinson himself noted the steamy conditions. Thus Mr. Taylor was not acting improperly or negligently, but was trying to determine the fill level absent adequate gauging equipment on the McGill tanker.

RISKS OF HYDROGEN SULFIDE IN COMPOSTING:

A book on hydrogen sulfide describes case reports dated from 1961 and 1964 of workers killed by hydrogen sulfide while working at poultry fertilizer plants. (**Tab 1**, book pages).

A trade publication in the compost industry is Biocycle. In November 2011, BioCycle magazine and BioCycle.net published an article entitled Worker Safety In Confined Spaces. The article documented the recent tragedy at the California composting facility and a British Columbia facility. (See **Tab 2** – BioCycle article).

The article described how two workers died at a composting facility in California after exposure to hydrogen sulfide and carbon dioxide gas. The two workers were in a concrete drainage tunnel. A third worker was hurt by fumes at the opening of the tunnel. (**Tab 2**).

The article also mentioned how five victims were overcome by H2S gas at a mushroom substrate compost facility in British Columbia, Canada. The owners failed among other things to educate the workers about confined space hazards. (**Tab 2**).

The article also quotes, Robert Spencer, an environmental planning consultant, who states: "Composting facilities and their potential to generate hydrogen sulfide in confined spaces have much in common with the hundreds of thousands of wastewater treatment plants around the globe, and safety procedures are very well established in that industry." (**Tab 2**, p. 2).

McGill is featured in Biocycle news roundups and Noel Lyons of McGill spoke at a Biocycle conference in 2011. (**Tab 3**). McGill Delway plant manager Anthony Teachey testified that the company subscribed to Biocycle. See **Tab 4,** Teachey Deposition, at pp. 7, 9

(worked for McGill as plant manager), 85-86 (McGill subscribes to Biocycle), 92-93 (may have heard about H2S from Biocycle).

Another Biocycle article dated January 2012 only a month before the death discusses "worker protection at composting sites." (**Tab 5**). It describes the importance of protecting from toxic fumes and gases including hydrogen sulfide. It discusses measuring for toxic gas levels around confined spaces.

A Biocycle article on "process control" dated from 2008 discusses McGill operations. The second page of the same article discusses hydrogen sulfide gas. (**Tab 6**).

A Biocycle article dated from 2005 quotes Craig Coker whom it says was then employed with McGill. He is quoted noting the hydrogen sulfide corrosion issues that wastewater plants face. This quote further illustrates McGill's clear knowledge of hydrogen sulfide gas and its properties. (**Tab 7**).

A Biocycle article dated from June 2005 discusses both ammonia and hydrogen sulfide issues present at compost facilities. (**Tab 8**).

There is a Biocycle article dated January 2006 written by Craig Coker, who as noted had been employed by McGill. This article discusses hydrogen sulfide and composting and discusses regulatory requirements in Virginia, where McGill was opening a plant. (**Tab 9**). The end of the article describes that Mr. Coker was the chief engineer for McGill.

"Composting roundup" articles in Biocycle describe a fatal hydrogen sulfide incident at a composting plant in California and how that facility used wastes such as food wastes, grass clippings and manure. (**Tab 10**). McGill states that it processes similar wastes.

Specifically, in 2005, McGill in a Poultry Nutrient Management report (**Tab 11**) describes its waste pick-ups to include as follows:

> The company's primary revenue stream is derived from tipping fees paid by waste generators for processing a wide variety of materials such as:
>
> - Agricultural wastes like manures, effluent, separated solids, bedding, hatchery waste, stover.
> - Municipal wastes like yard waste, pallets, unpainted/untreated dimensional lumber and land clearing debris, water and drinking water treatment residues, sheetrock (drywall), source-separated food products.
> - Processing wastes like wood ash, charcoal, wood waste, sawdust, wood chips, and other processing residuals. These include residuals from livestock rendering, food processing, gin operations, tobacco processing, pharmaceuticals, and other agribusiness operations.

(**Tab 11,** page 4).

McGill in other documents lists a wide variety of customers from whom it picks up wastes. See **Tab 12** -- documents from the NC and Virginia Department of the Environment files for McGill that list many of the customers from whom McGill picked up feedstocks. See also **Tab 41** – Biosolids News, April 2009 (stating McGill used feedstocks including biosolids, poultry and hog manure, wood waste, food waste and yard waste).

Another "Composting Roundup" Biocycle article includes more information about the California compost facility deaths and quotes the California OSHA chief as saying: "Hydrogen sulfide gas is a fatal and common by-product of the composting process." (**Tab 9**; see also **Tab 13**).

The OSHA website says:

> "Composting and other activities to recycle organic material can create hazardous environments which can be fatal to workers who are not aware of the potential dangers. In particular, composting facilities often have confined space hazards, which may have respiratory hazards such as hydrogen sulfide or carbon monoxide gases, or other gases that may displace the oxygen in the area. Workers must have proper training and permits before entering these potentially hazardous atmospheres. The links in the hazard section below provide more information on confined space hazards and precautions, as well as other hazards that may be present during operations to recycle organic materials."

See **Tab 14** – OSHA web page available at https://www.osha.gov/SLTC/recycling/recycling_organic.html.

The EPA toxicological review of hydrogen sulfide, dated June 2003, includes an example of how a lethal hydrogen sulfide situation was found at a fertilizer plant:

> At a poultry feather fertilizer plant, a worker was exposed to H2S while attempting to repair a leak and was killed (Breysse, 1961). Hydrogen sulfide was created as a byproduct of the putrefaction of the feathers, and was eliminated through a pipe leading to a sawmill log pond where it was discarded. In the lungs of the victim, the alveolar spaces were filled with edema fluid and numerous pigment-filled macrophages. The diagnosis was pulmonary edema, and the cause of death was H2S inhalation. Measurements of H2S concentrations at various locations in the fertilizer plant revealed levels as high as 4,000 ppm (5,560 mg/m3) during the cooking and putrefaction of feathers.

See EPA toxicological review of hydrogen sulfide, June 2003. (**Tab 15**, at p. 12).

Sources of hydrogen sulfide gas listed in an EPA October 1993 report to Congress include "fertilizer makers." See US EPA, Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas, 1993, Table II-2, listing slaughterhouse workers and fertilizer makers as being at risk of H2S exposure (**Tab 16,** p. II-5). Another OSHA document titled "hydrogen sulfide in workplace atmospheres" lists as one occupation with potential exposure to H2S as "fertilizer makers." (**Tab 17**).

"The most common sulfur based compounds contributing to odors at composting facilities include hydrogen sulfide, dimethyl sulfide, dimethyl disulfide, dimethyl trisulfide, carbon disulfide, and methanethiol." Williams, Todd O, "Control of Odorous and Volatile Organic Compound Emissions From Composting Facilities." Composting in the Carolinas -- Proceedings of Conference on Composting Solid Waste, Yard Wastes and/or Biosolids, 134-143. Editors Richard K. White et al. Clemson, SC: Clemson University, 1995 (**Tab 18,** p. 135).

Another hydrogen sulfide incident specifically related to a fertilizer/compost company notes:

> Two employees of a fertilizer company in Riga, Michigan, were assigned to install a new float valve in an old 35-foot deep cistern for a new 300-foot well. This cistern was covered with a concrete slab with entry through a covered manhole. The first worker entered the cistern and as he reached a plank platform six feet below the opening, he was instantly overcome and fell unconscious into the water below. The man on the surface immediately ran to the nearby plant for help. Several workmen responded and two of them entered the cistern to render aid. They met the fate of the first worker. A passerby who had been drawn to the scene by the crowd which had gathered was told by an excited bystander that several men in the cistern were drowning. Upon hearing this, he shouted, "I can swim, I can swim" and pulled away from a company employee who was trying to restrain him. Now there were four bodies in the well.
>
> Shortly afterward the fire department arrived at the scene with proper rescue equipment. The fire chief entered the cistern wearing a self-contained breathing apparatus. After reaching the plank platform, he removed his face mask to shout instructions to those on the surface and he, too, was instantly overcome. All five persons died in the cistern.
>
> Tests of the cistern atmosphere revealed that H2S in a concentration of about 1000 parts per million was present when the five deaths occurred. The water pumped up from the deep well contained dissolved hydrogen sulfide which was released in the unventilated cistern.

See **Tab 19** -- Michigan Occupational Safety & Health Administration, Hydrogen Sulfide and Sour Crude Oil. Other materials regarding composting plants reference the dangers of hydrogen sulfide:

> If your facility has confined spaces, train both staff and inspectors on the risks of entering these areas. Confined spaces may have dangerously high levels of hydrogen sulfide gas and ammonia. Over exposure to hydrogen sulfide in confined spaces has caused deaths.

See **Tab 20**, "Siting and Operating Composting Facilities in Washington State," July 2011. See also **Tab 43** – Composting Information Sheet listing hydrogen sulfide as one of the dangers.

RISKS AROUND CONFINED SPACES AND TANKERS:

In addition to the information above, other documents and reports reflect how risks around tankers and confined spaces are well-known and how tankers may be confined spaces.

A report dated 1993 described the death of a worker who was working in a tanker and discusses how the tanker was a confined space. (**Tab 21**).

A California OSHA news release dated March 21, 2012, describing the California compost facility where workers died from hydrogen sulfide, specifically discussed how confined spaces were involved. (**Tab 13**). See details provided in FACE report. (**Tab 34**).

An OSHA incident report on the US DOL website describes how a worker was killed when he opened the hatch on a tanker truck that had contained molten sulphur. The incident report from 2006 describes the tanker as a confined space. (**Tab 22**). It states in part:

> Accident: 200554160 - Employee Is Killed In Toxic Confined Space
>
> On January 4, 2006, Employee #1, an automobile mechanic, climbed to the top of a tanker truck that had previously contained molten sulfur. Employee #1 opened the hatch at the top of the tanker to adjust a marker rod, which allowed a visual indication of the level of volume of the product within the tanker. He entered the tanker without airline respiratory protection. At this time a coworker, equipped with a respirator, attempted to rescue Employee #1, without success. Employee #1 died as a result of a heart attack.
>
> (**Tab 22**).

Those facts are very similar to our case, involving a wastewater operator working near the open hatch of a tanker trailer. See **Tab 23** – Tim Artis Affidavit.

Further, as the truck driver Ricky Robinson noted, the chute that connected to the overhead tank would hang into or over the open hatch, and the worker would have to hook the chute up, meaning he was very close to the hatch. **Tab 24** – Ricky Robinson deposition excerpts.

A report of a 1986 death by asphyxiation described how it occurred in the 6500 gallon tank of a tractor-trailer and how it was a confined space. (**Tab 25**).

A report from 2003 described how a worker died when working at a railroad tank car and how it was a confined space and two workers were asphyxiated. (**Tab 26**).

A report from 2010 discussed workers who died in an empty tanker containing H2S. **Tab 27** – Poli et al., "Occupational Asphyxiation by Unknown Compounds," Forensic Science International 197 (2010) e19-e26.

OSHA confined space rules note the related danger to people in areas near the confined space. Thus one OSHA document notes when examining confined spaces that "the surrounding area shall be surveyed to avoid hazards such as drifting vapors from tanks, piping or sewers." (**Tab 28**, at page 2). In another incident from 2006, it was noted how "workers are in danger not only inside confined spaces, but also around the opening where inert gases like nitrogen are flowing out." (**Tab 29**, discussing Valero accident).

It is clear a worker does not need to place their head into a confined space to be injured by escaping gases. **Tab 30** – Tanaka et al., "Bronchial Injury and Pulmonary Edema Caused by Hydrogen Sulfide Poisoning," American Journal of Emergency Medicine, Vol. 17, No. 4, July 1999, p. 427 (workers outside of valve were harmed by escaping H2S gas.; **Tab 31** – Chaturvedi et al., "A fatality caused by accidental production of hydrogen sulfide," Forensic Science International 123 (2001) 211-14 (fatal injury to truck driver transferring chemicals from a tanker to a tank where H2S was generated and inhaled); **Tab 32** -- Gabbay et al., "Twenty foot fall averts fatality from massive hydrogen sulfide exposure," The Journal of Emergency Medicine, Vol. 20, No. 2, pp. 141-44 (man working on top of ladder exposed to H2S coming out of pipe); **Tab 33** – Oesterelweg et al., "Death may come like a stroke of lightning," Int J Legal Med (2008) 122:101-07 (case 1 gives an example of an incident of H2S exposure including people outside confined spaces); **Tab 42** (OSHA accident reports of incidents where worker injured by hydrogen sulfide, including those not physically inside a confined space).

An OSHA document dated 2008 described how a space may be a confined space if it is big enough that someone could fit their entire body into it. (**Tab 35**). OSHA said it could be a confined space if it were "possible" that a worker could fit his whole body in – not only if the worker was really doing so.

Another OSHA document reflects how "entry" of a confined space simply means that any part of a person's body breaks the plane of the confined space. (**Tab 36**). (See also **Tab 37**, slide 13 – "If you break the plane of a confined space, you have entered the confined space").

In 2014 it was reported how a worker died in a tanker truck while he was doing sampling for nitrogen. Once again, the tanker was considered to be a confined space. (**Tab 38**). Other reports also reflect that tankers can be considered as confined spaces and can lead to fatal consequences unless proper protections are used. (**Tab 39** – report of worker death from fumes in tanker trailer that was a confined space).

According to OSHA, a finding that an area is a confined space triggers numerous duties. (See **Tab 37** – confined space training slides). Confined spaces include tanks. (Slide 16). They can include tanker cars. (Slide 40). A well-known potential hazard in a confined space is hydrogen sulfide. (Slide 17). Any part of a body passing through a confined space is considered entry. (Slide 20).

STEAMY NATURE OF THE WASTE

Mr. Schumacher states that Mr. Taylor must have had his head too close to the open hatch.

In fact, Mr. Taylor was only doing what other wastewater operators like Tim Artis did in cold conditions at night when trying to load.

Mr. Taylor was draining the waste at night, when it was cold (February 2012, in winter), and during those conditions the sludge would emit steam. (See Tim Artis affidavit, **Tab 23**; 911 call transcript, **Tab 40**, p. 5).

Because of the dark and steamy conditions, workers often removed their goggles, unhooked their harnesses, got down and leaned in close to the hatch to determine the fill level of the tanker. This is what Mr. Artis had done previously and is consistent with what Ricky Robinson, the driver, says he saw Brandon doing – i.e. taking off his goggles, his harness, and leaning down. (**Tab 24** – Robinson deposition excerpt).

In fact during the 911 call, Mr. Robinson himself noted the steamy conditions. In the call to 911 when the incident occurred, the truck driver, Ricky Robinson mentioned the "steam that was coming off, from being, from hanging over inside the tanker, the tanker, the liquid that was going in is kinda warm I guess, uh a lot of toxic fumes is mixed in with it." (**Tab 40**, p. 5).

Thus Mr. Taylor was not acting improperly or negligently, but was trying to determine the fill level absent adequate gauging equipment on the McGill tanker.

On the night in question it was around midnight in February 2012, and the temperature was about 40 degrees out. (Schumacher Report, page 13).

Also, it is important to note that first the tanker was partway filled from overhead storage tank 1. Then, it was being topped off from overhead tank 4. According to Tim Artis, this meant that Brandon could not just assume how long it would take to fill. He had to stay there and closely monitor the filling. See **Tab 23,** Tim Artis Affidavit.

It is clear that tank 4 was only being drained after tank 1 was, based on the testimony of Ricky Robinson:

114

Q. Walk me through the night of Brandon's incident.

A. I arrived at Smithfield Packing, proceeded to the load-out area. When I got there, I positioned the tractor in front of and waited on Brandon at the time, and he met me there. **And previously -- when we met, he had already told me that we would be contained in the chute -- tank number one.**

So we backed to tank number one, and Brandon went up and he started to unload into the McGill tanker. And evidently he emptied that tank, and he came down and told me to back up to number four.

And at that time I backed up and positioned the truck underneath chute number four, and Brandon climbed back up. And I'm assuming he hooked his harness and everything because, when I did see him in the mirror, he was disconnecting the harness.

But he started the process evidently. I am still in the truck, and I'm watching him from the mirror, and I'm continuously filling out my paperwork. And so I'm watching, as I always do,

115

watching around, looking at different things, and I'm filling out my paper, and I'm watching him in the mirror.

And as I watched him from the driver's side mirror, I caught a glance -- I saw something move so it got my attention, and I watched to see what he was doing. And when I saw him, he raised up and he did

this and --
MS. ALLEN: For the record, let's just go ahead and describe what you just acted because when we read it on the transcript, we're not going to know.
A. Okay. I'm sorry. **He reached up with both hands and removed his helmet and placed the helmet to the right of -- it seemed like the right of the hatch.**
BY MR. HUGHES:
Q. Yep.
A. What seemed to me, because I couldn't see, I could just tell from the angle that **he went back down with his hands and he removed his goggles.** I didn't take my eyes off him because he was doing something that he hadn't done since they were assigned to wear the goggles and the laying all that -- the harness.

116

So the first thing I thought was -- to myself was, "What is he doing?" So I just watched him. And when he removed the helmet and the goggles, he went back down. The hatch is open, so with the position that the truck and trailer was in and he being in the position that he was and I'm in the truck sitting, so I couldn't see him anymore.

Tab 24, emphasis added. According to Mr. Artis, this activity of removing the goggles is consistent with a worker who is dealing with sludge emitting steam at night. See Artis Affidavit.

MEASURES TO GAUGE TANKER FILL LEVELS:

I personally visited a company that sells a variety of pieces of equipment that can be used to measure the fill levels. I visited the facility of Lely Manufacturing, Inc., located in Wilson, NC, (See http://www.lelyus.com/.) on December 12, 2014. During the visit I created a photographic record reflecting the varieties of gauging equipment that were available. These include:

- Sight gauges
- Float gauges
- Laser gauges
- Load cells

- Sight tubes

See photographs at **Tab 43**.

These devices can be readily obtained for costs as low as approximately $2.00 for a sight gauge. A sight tube also has a very low cost. Float gauges can be obtained for approximately $175 to $275. Laser gauges cost approximately $1,400 and load cells cost approximately $10,000.

A load cell measures the weight of the material being loaded and has a display monitor in the truck cab. A laser gauge uses a laser to measure the surface height of the material filling the tanker. A sight tube works similar to the visual tubes on the side of coffeemakers, working from the principle of the hydrostatic head.

While visiting the Lely Manufacturing facility, I also created a photographic record of the tankers with confined space labels on them. This photographic record made at the Lely Manufacturing facility shows confined space labels on all the tankers. These are the same type labels that NC OSHA cited McGill for not having on its tankers after the subject fatality.

[Signature page to follow]

DATED: 12.18.2014

SIGNED: Robert Weaver III